

LISTING OF CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Withdrawn) A capsular medical system comprising:

a radio receiving device in an extracorporeal device, to which a plurality of antennas are connected;

a radio transmitting device in a capsular in-body unit, which transmits medical data;

a switching device which switches antennas provided for the extracorporeal device;

a monitor device which monitors a receiving state of the selected antenna; and

a storing device which stores the receiving state every antenna,

wherein the monitor device comprises:

a data amount measuring device which measures the data amount of medical data transmitted from the in-body unit;

a timer device which counts the time required for transferring the medical data in units from the in-body unit; and

a calculating device which calculates a data transfer speed based on the data amount and the time required for transferring the data.

2. (Withdrawn) The capsular medical system according to Claim 1, wherein the data amount measuring device measures the data amount between two symbols which are added to the head and the end of the medical data.

3. (Withdrawn) The capsular medical system, wherein the timer device counts an interval from the time for detecting the symbol added to the head of the medical data to the time for detecting the symbol added to the end of the medical data.

4. (Withdrawn) A capsular medical system comprising:

a radio receiving device in an extracorporeal device, to which a plurality of antennas are connected;

a radio transmitting device in a capsular in-body unit, which transmits medical data;

a switching device which switches the antennas provided in the extracorporeal device;

a monitor device which monitors a receiving state of the selected antenna; and

a storing device which stores the receiving state every antenna,

wherein the monitor device which monitors the receiving state comprises:

a device which previously stores the data amount of medical data in units from the in-body unit;

a timer device which counts a transfer requiring time of the medical data in units from the in-body unit; and

a calculating device which calculates a data transfer speed based on the time required for transferring the data amount.

5. (Withdrawn) A capsular medical system comprising:

a radio receiving device in an extracorporeal device, to which a plurality of antennas are connected;

a radio transmitting device in a capsular in-body unit, which transmits medical data;
a switching device which switches the antennas provided in the extracorporeal device;
a monitor device which monitors a receiving state of the selected antenna; and
a storing device which stores the receiving state every antenna,

wherein the monitor device comprises:

a storing device which stores the lowest allowable value in the receiving state;
a comparing device which compares the receiving state with the lowest allowable value;

and

a switching instructing device which issues an instruction for switching the antenna.

6. (Withdrawn) A capsular medical system comprising:

a radio receiving device in an extracorporeal device, to which a plurality of antennas are connected;

a radio transmitting device in a capsular in-body unit, which transmits medical data;
a switching device which switches the antennas provided in the extracorporeal device;
a monitor device which monitors a receiving state of the selected antenna; and
a storing device which stores the receiving state every antenna,

wherein the monitor device comprises:

a first timer device which counts a time required for transferring the medical data in units,
which is transmitted from the in-body unit;

a second timer device which counts a time required for transferring the medical data in units, from the in-body unit;

a calculating device which calculates a data transfer speed based on stored data amount and the time required for transferring the data; and

a position calculating device which calculates the position of the in-body unit based on the data transfer speed of each of the plurality of antennas.

7. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body; and

at least two antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer which is set to a predetermined time interval; and

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit, and a receiving state where the extracorporeal device carries out reception from the in-body unit,

wherein the extracorporeal device generates a transmission/reception switching signal for switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing for switching communication direction of the receiving and transmitting using the transmission/reception switching signal in accordance with a communication state detected by the detecting device at the predetermined time interval set by the timer.

8. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body;

a plurality of antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer, which is set to a predetermined time interval;

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit, and a receiving state where the extracorporeal device carries out reception from the in-body unit; and

an antenna selecting device which detects a receiving strength, in the in-body unit, of signals transmitted from at least two antennas and selects the antenna in a preferable receiving and transmitting state;

wherein the extracorporeal device generates a transmission/reception switching signal for switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing for switching communication direction of the receiving and transmitting using the transmission/reception switching signal as a clock ~~in accordance with the communication state detected by the detecting device and at the predetermined time interval set by the timer,~~ to control the antenna selecting device to select the antenna.

9. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body;

a plurality of antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer, which is set to a predetermined time interval;

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including transmitting state where the extracorporeal device carries out transmission to the in-body unit, and a receiving state where the extracorporeal device carries out reception from the in-body unit; and

an antenna selecting device which detects a receiving strength, in the in-body unit, of signals transmitted from at least two antennas and selects the antenna in a preferable receiving and transmitting state,

wherein the extracorporeal device generates a transmission /reception switching signal for switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing for switching communication direction of the receiving and transmitting using the transmission/reception switching signal as a clock signal at the predetermined time interval set by the timer, and when an operation for connection for the transmitting or receiving fails to establish the connection is not establishable, the antenna selecting device is controlled to select the antenna.

10. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body;

a plurality of antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer, which is set to a predetermined time interval;

an antenna selecting device which detects a receiving strength, in the in-body unit, of signals transmitted from at least two antennas and selects the antenna in a preferable receiving and transmitting state; and

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit and a receiving state where the extracorporeal device carries out reception from the in-body unit;

wherein the detecting device detects communication states of antennas of a predetermined number less than a number of all of the plurality of antennas; and

wherein the extracorporeal device generates a transmission/reception switching signal for switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing for switching communication direction of the receiving and transmitting using the transmission/reception switching signal as a clock signal ~~in accordance with the communication state detected by the detecting device and at the predetermined time interval set by the timer.~~

11. (Original) The capsular medical system according to Claim 10, wherein the antenna whose receiving and transmitting state is checked is determined based on the antenna which currently receives data.

12. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body;

a plurality of antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer, which is set to a predetermined time interval;

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit and a receiving state where the extracorporeal device carries out reception from the in-body unit; and

an antenna selecting device which detects a receiving strength, in the in-body unit, of signals transmitted from at least two antennas and selects the antenna in a preferable receiving and transmitting state; and

a storing device, which stores the communication state detected by the detecting device;

wherein the extracorporeal device generates a transmission/reception switching signal for switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing

for switching communication direction of the receiving and transmitting using the transmission/reception switching signal as a clock signal ~~at the predetermined time interval set by the timer~~, and when the receiving strength data is not obtainable in the selecting of the antenna by the antenna selecting device, the extracorporeal device refers to the communication state stored in the storing device to control the antenna selecting device to select the antenna that is assured to be communicable.

13. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body;

a plurality of antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer which is set to a predetermined time interval;

an antenna selecting device which detects a receiving strength of a signal transmitted from the in-body unit by at least two antennas and selects the antenna in a preferable receiving and transmitting state; and

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including a transmitting state where the extracorporeal device carries out

transmission to the in-body unit and a receiving state where the extracorporeal device carries out reception from the in-body unit, [[and]] which controls the antenna selecting device to select the antenna in accordance with the communication state detected by the detecting device and at the predetermined time interval set by the timer, and which generates a transmission/reception switching signal for switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing for switching communication direction of the receiving and transmitting using the transmission/reception switching signal as a clock signal.

14. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body;

a plurality of antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer which is set to a predetermined time interval;

an antenna selecting device which detects a receiving strength of a signal transmitted from the in-body unit by at least two antennas and selects the antenna in a preferable receiving and transmitting state; and

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit and a receiving state where the extracorporeal device carries out reception from the in-body unit, ~~[[and]]~~ which controls the antenna selecting device to select the antenna when an operation for connection for the transmitting or receiving fails to establish the connection, is not establishable and which generates a transmission/reception switching signal for switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing for switching communication direction of the receiving and transmitting using the transmission/reception switching signal as a clock signal.

15. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body;

a plurality of antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer which is set to a predetermined time interval;

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including a transmitting state where the extracorporeal device carries out

transmission to the in-body unit, and a receiving state where the extracorporeal device carries out reception from the in-body unit; and

an antenna selecting device which detects a receiving strength of a signal transmitted from the in-body unit by at least two antennas and selects the antenna in a preferable receiving and transmitting state;

wherein the detecting device detects communication states of antennas of a predetermined number less than a number of all of the plurality of antennas, and

wherein the extracorporeal device generates a transmission/reception switching signal from switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing for switching communication direction of the receiving and transmitting using the transmission/reception switching signal as a clock signal ~~in accordance with the communication state detected by the detecting device and at the predetermined time interval set by the timer.~~

16. (Original) A capsular medical system according to Claim 15, wherein the antenna who's receiving and transmitting state is checked is determined based on the antenna which currently receives data.

17. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to the body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside the human body;

a plurality of antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

a timer which is set to a predetermined time interval;

a detecting device which detects, at the predetermined time interval set at the timer, a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit, and a receiving state where the extracorporeal device carries out reception from the in-body unit;

an antenna selecting device which detects a receiving strength of a signal transmitted from the in-body unit by at least two antennas and selects the antenna in a preferable receiving and transmitting state; and

a storing device, which stores the communication state detected by the detecting device;

wherein the extracorporeal device generates a transmission/reception switching signal for switching between the transmitting and receiving in accordance with the communication state detected by the detecting device and synchronizes timing for switching the antenna with timing for switching communication direction of the receiving and transmitting using the transmission/reception switching signal as a clock signal ~~at the predetermined time interval set by the timer~~, and when the receiving strength data is not obtainable in the selecting of the antenna by the antenna selecting device, the extracorporeal device refers to the communication state stored in the storing device to control the antenna selecting device to select the antenna that is assured to be communicable.

18. (Previously Presented) The capsular medical system as set forth in claim 7, wherein the detecting device selects one of the at least two antennas arranged to communicate data to the in-body unit connected to the extracorporeal device, via the switching device, in response to a detected communication state corresponding to movement of the capsular in-body unit in the body cavity.

19. (New) A capsular medical system comprising:

- a capsular in-body unit having a radio communication device for introduction into a body cavity by swallowing or insertion; and

- an extracorporeal device arranged outside a human body comprising:

- a communication device for bidirectional communication with the in-body unit;

- at least two antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit;

- a transmission/reception switching section which switches communication direction with the in-body unit;

- a timing signal generating section which generates a timing signal related to timing for switching communication direction of the transmission/reception switching section;
- and

- an antenna selecting section which selects an antenna that communicates with the in-body unit among at least the two antennas based on the timing signal outputted from the timing signal generating section.

20. (New) A method for controlling a capsule medical system having a capsular in-body unit having a radio communication device which is inserted or swallowed into a body cavity, and an extracorporeal device arranged outside a human body and comprising a communication device

for bidirectional communication with the in-body unit, and at least two antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit, the method comprising:

- a transmission/reception switching step which switches communication direction between the in-body unit and the extracorporeal device;

- a timing signal generating step which generates a timing signal related to timing for switching the communication direction; and

- an antenna selecting step which selects an antenna that communicates with the in-body unit among at least the two antennas based on the generated timing signal.

21. (New) A method for controlling a capsule medical system having a capsular in-body unit having a radio communication device which is inserted or swallowed into a body cavity, and an extracorporeal device arranged outside a human body and comprising a communication device for bidirectional communication with the in-body unit, and at least two antennas connected to the extracorporeal device and arranged near the body surface to communicate data to the in-body unit, the method comprising:

- a detecting step which detects, at a time interval of a timer which is set to a predetermined time interval, a transmitting state where the extracorporeal device carries out transmission to the in-body unit, and a receiving state where the extracorporeal device carries out reception from the in-body unit;

- a transmission/reception switching signal generating step which generates a transmission/reception switching signal for switching communication direction between the in-body unit and the extracorporeal device based on the detection timing of the detecting step; and

an antenna selecting step which selects an antenna that communicates with the in-body unit among at least the two antennas, using the transmission/reception switching signal as a clock signal.